REMARKS

Status of the Claims

Pending claims

Claims 1 to 83 as filed are pending.

Restriction Requirement and Election

In the restriction requirement dated December 26, 2001, the Patent Office alleged that the pending claims of the application were directed to three separate and distinct inventions under 35 U.S.C. §121:

Group I: Claims 1 to 57 and 82 to 83, drawn to a modified biological molecule, an article comprising an array, a kit and a method of making a biological molecule and an article.

Group II: Claims 58 and 59 drawn to a method for identifying a specific binding partner.

Group III: Claims 60 to 81 drawn to a method of generating a molecular profile.

In Applicants' response to the Restriction Requirement on February 7, 2002, Group I, claims 1 to 57 and 82 to 83, drawn to a modified biological molecule, an article comprising an array, a kit and a method of making a biological molecule and an article, was elected. Accordingly, claims 1 to 57, 82 and 83 are pending and under consideration.

Claims amended, canceled and added in the instant amendment

Claims 1 to 22, 82 and 83 are amended and new claims 84 to 103 are added. Thus, after entry of the instant amendment, claims 1 to 84 will be pending and claims 1 to 57 and 82 to 103 will be pending and under consideration.

Outstanding Rejections

Claims 1 to 3, 13, 18 to 24 are rejected under the judicially created doctrine of obviousness-type double patenting. Claims 1 to 3, 8 to 11, 18 to 28 and 54 are rejected under 35 USC 102(b) as allegedly anticipated by Krinski et al. U.S. Patent No. 4,713,116 (hereinafter "Krinski"). Claims 1-3, 12-13, 15, 23-28, and 32-34 are rejected under 35 USC 102(b) as

allegedly anticipated by Plueddemann, U.S. Patent No. 4,231,910 (hereinafter "Plueddemann"). Claims 1-3, 12-15, 23-28, 32-38, 47 and 82-83 are rejected under 35 USC 102(e) as allegedly anticipated by Beattie, U.S. Patent No. 6,426,183, filed August 14, 1998 (hereinafter "Beattie"). Claims 16 to 17, 30 to 31, 40 to 46 and 48 to 57 are rejected under 35 USC 103(a) as allegedly unpatentable over Beattie and in view of Pinkel et al., U.S. Patent No. 5,830,645, filed November 3, 1998. Applicants respectfully traverse all outstanding objections to the specification and rejections of the claims.

Information Disclosure Statements

In the Information Disclosure Statement (IDS) submitted September 19, 2001, Applicants submitted a copy of the Form PTO-1449 submitted for the parent application U.S. Serial Number 09/071,876, on May 4, 1998. A copy of this statement was submitted because Applicants wish the information to appear among the "references cited" on any patent to issue therefrom (MPEP §609). Applicants respectfully request the Examiner write "all considered" and his or her initials on that Form PTO-1449 to indicate that all citations have been considered, see MPEP 609 C(2), pg 609, 8th ed., Aug. 2001.

Support for the Claim Amendments

The specification sets forth an extensive description of the invention in the new and amended claims. Support for claims directed to compositions comprising nucleic acids or analogs or mimetics thereof, polysaccharides or analogs or mimetics thereof, lipids or analogs or mimetics thereof, peptidomimetics or small molecules can be found, *inter alia*, on page 15, lines 1 to 13, and page 16, line 18 to page 17, line 22.

Double Patenting Issues

Obviousness-type double patenting

Claims 1 to 3, 13, 18 to 24 are rejected under the judicially created doctrine of

which is a CIP of U.S. Patent No. 6,048,695. Applicants will consider filing a terminal disclaimer at such time claims are held allowable.

Statutory-type double patenting

Claims 1 to 3, 8 to 11, 18 to 28 and 54 are rejected under 35 U.S.C. §101 as allegedly claiming the same invention as that of claims 8 to 25 and 27 to 32 of co-pending USSN 09/546,085. The instant application is a CIP of USSN 09/546,085, which is a CIP of U.S. Patent No. 6,048,695.

Claims 8 to 25 and 27 to 32 of co-pending USSN 09/546,085, read as follows:

8. A modified biological molecule comprising a biological molecule covalently bound to a compound having the formula: $R_1 — X — R_2$, wherein R_1 is a cyclic ether group, R_2 is an alkoxysilane group; and X is a moiety chemically suitable for linking the cyclic ether group and the alkoxysilane group.

9. The modified biological molecule of claim 8, wherein the biological molecule comprises a polypeptide or a peptide.

10. The modified biological molecule of claim 8, wherein the biological molecule comprises a polysaccharide or a saccharide.

11. The modified biological molecule of claim 8, wherein the biological molecule comprises a lipid.

12. The modified biological molecule of claim 8, wherein the biological molecule comprises a small molecule.

13. The modified biological molecule of claim 8, wherein the cyclic ether group comprises an epoxide group.

14. The modified biological molecule of claim 13, wherein the epoxide group comprises an ethylene oxide.

15. The modified biological molecule acid of claim 8, wherein the alkoxysilane is selected from the group consisting of $—Si(OCH_3)_3$, $—Si(OC_2H_5)_3$, $—Si(OCH_3)H_2$, $—SI(OCH_3)(CH_3)_2$, and $—Si(OCH)_3)_2CH_3$.

16. The modified biological molecule of claim 8, wherein the compound is 3-glycidoxypropyltrimethoxysilane.

[illegible] R_2 is an alkoxysilane group; and X is a moiety chemically suitable for linking the cyclic ether group and the alkoxysilane group.

18. The modified biological molecule of claim 17, wherein the biological molecule comprises a polypeptide or a peptide.

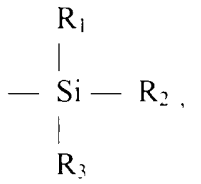
19. The modified biological molecule of claim 17, wherein the biological molecule comprises a polysaccharide or a saccharide.

20. The modified biological molecule of claim 17, wherein the biological molecule comprises a lipid.

21. The modified biological molecule of claim 17, wherein the biological molecule comprises a small molecule.

22. The modified biological molecule of claim 17, wherein the amino group is a primary amine.

23. The modified biological molecule of claim 17 wherein the alkoxysilane is selected from the group consisting of —$Si(OCH_3)_3$, —$Si(OC_2H_5)_3$ and



wherein R_1, R_2 and R_3 are selected from the group consisting of —H, —CH_3, —OCH_3, and —OC_2H_3, and at least one of R_1, R_2 or R_3 is either —OCH_3 or —OC_2H_3.

24. The modified biological molecule of claim 17, wherein the compound is 3-aminopropyltriethoxysilane.

25. A microarray comprising:
a solid support, and
modified biological molecules, as set forth in claim 8 or claim 17, immobilized onto the solid support.

27. The microarray of claim 25, wherein the solid support comprises a glass.

28. The microarray of claim 25, wherein the solid support comprises a surface

29. The microarray of claim 25, wherein the solid support comprises a metal oxide surface.

30. The microarray of claim 25, wherein the solid support comprises a compound selected from the group consisting of a polystyrene, a polyester, a polycarbonate, a polyethylene, a polypropylene, and a nylon.

31. The microarray of claim 25, wherein biological molecules are immobilized onto the solid support in orderly, discrete spots.

32. The microarray of claim 31, wherein the discrete spots are about 50 microns in diameter.

In co-pending USSN 09/546,085 independents claim 8 and 17 are different in scope from claim 1 of the instant application.

Independent claim 8 of USSN 09/546,085 reads on modified biological molecules comprising a compound having the formula: $R_1 — X — R_2$, wherein R1 is a cyclic ether group. In contrast, claim 1 of the instant application reads on modified biological molecules comprising a compound having the formula: $R_1 — X — R_2$, wherein R1 is a cyclic ether group or an amino group.

Independent claim 17 of USSN 09/546,085 reads on modified biological molecules comprising a compound having the formula: $R_1 — X — R_2$, wherein R1 is an amino group. In contrast, claim 1 of the instant application reads on modified biological molecules comprising a compound having the formula: $R_1 — X — R_2$, wherein R1 is a cyclic ether group or an amino group.

Because the independent claims 8 and 17 of USSN 09/546,085 differ in scope from claim 1 of the instant invention, claims dependent on claims 8 and 17 of USSN 09/546,085 also differ in scope from claims of the instant application.

Additionally, claim 1 of the instant application has been amended in this response, and, claims in co-pending USSN 09/546,085 have been amended in a response submitted February 19, 2003; please see amendment submitted for co-pending USSN 09/546,085.

[illegible] claim 17 of USSN 09/546,085 after entry of the amendment submitted

8. (Amended, USSN 09/546,085) A composition comprising a molecule selected from a polysaccharide or a saccharide, a lipid, an antibody or a small molecule covalently bound to a compound having the formula: $R_1 — X — R_2$, wherein R_1 is a cyclic ether group,

R_2 is an alkoxysilane group; and X is a moiety linking the cyclic ether group and the alkoxysilane group.

17. (Amended, USSN 09/546,085) A modified biological molecule covalently bound to a compound having the formula: $R_1 — X — R_2$, wherein R_1 comprises an amino group, R_2 comprises an alkoxysilane group; and X comprises a moiety linking the amino group and the alkoxysilane group.

Claim 1 of the instant application after entry of this amendment will read:

1. (Amended, USSN 09/853,343) A composition comprising a nucleic acid or an analog or mimetic thereof, a polysaccharide or an analog or mimetic thereof, a lipid or an analog or mimetic thereof, a peptidomimetic or a small molecule modified by reaction with a compound having the formula: $R_1 — X — R_2$, wherein R_1 comprises a cyclic ether group or an amino group, R_2 comprises an alkoxysilane group and X comprises a moiety for linking the cyclic ether group or the amino group to the alkoxysilane group.

Claims 1 to 3, 8 to 11, 18 to 28 and 54 differ in scope from claims 8 to 25 and 27 to 32 of co-pending USSN 09/546,085. Accordingly, Applicants respectfully request the Patent Office reconsider and withdraw the statutory double patenting rejection under 35 U.S.C. §101.

Issues under 35 U.S.C. §112, second paragraph

Claims 9, 10, 12, 32, 36 and 37 stand rejected under 35 U.S.C. §112, second paragraph. The Patent Office alleges that the phrase "analog or mimetic thereof" is indefinite or unclear and suggests addition of the term "thereof." The instant amendment addresses this issue.

Issues under 35 U.S.C. §102(b)

Krinski et al. U.S. Patent No. 4,713,116

Claims 1 to 3, 8 to 11, 18 to 20 and 22 are rejected under 35 USC 102(b) as allegedly anticipated by Krinski et al. U.S. Patent No. 4,713,116.

The legal standard for anticipation under 35 U.S.C. §102 is one of strict identity. To anticipate a claim, a single prior source must contain each and every limitation of the claimed invention.

compound could be glycoxypropyltrimethoxysilane. The Patent Office also alleges that

modified biological molecule could be a protein material, a peptide or a polypeptide and that the alkoxysilane could be a propyl trimethyl silane.

Krinkski only discusses modifying protein materials with organosilanes such as the alkoxysilane 3- glycidoxypropyltrimethoxysilane (see, e.g., column 4, lines 31 or 41, of Krinski). Krinski is clearly focused on modifying vegetable protein materials, see, e.g., column 3, line 6 to column 4, line 30, of Krinski. For example, the Summary, column 2, lines 37 to 49, read:

> These and other objects are achieved in the present invention by the production of a modified vegetable protein adhesive binder having good rheological and paper coating characteristics. The present invention provides a process for the production of a modified vegetable protein adhesive binder which is suitable for use in pigment coating compositions wherein the process of producing the modified binder comprises forming an alkaline dispersion of a vegetable protein material followed by reaction of the dispersion with an organosilane reagent in an amount sufficient to modify the protein material.

Krinski only discusses modifying vegetable protein materials. Krinski does not teach or suggest modifying protein materials with any molecule other than with organosilanes, such as alkoxysilanes.

The Patent Office alleges that Krinski could include addition of amino groups to the modified biological molecule, citing column 4, lines 54 to 67. Applicants respectfully aver that Krinski does not teach or suggest addition of amino groups to a modified protein. The paragraph encompassing column 4, lines 54 to 67 reads in full:

> Although the present invention has not intended to be limited by the exact types of coating compositions in which the modified protein adhesive binder of the present invention may be employed; nevertheless, typical coating compositions which employ the modified protein adhesive binder of the present invention generally include ingredients such as pigments, fluidizers or thinning agents, as well as various other ingredients such as optical brighteners and co-binders such as acrylic or styrene-butadiene latexes. Typically the modified vegetable protein adhesive binder of the present [illegible] is dispersed in a solubilizing agent such as an alkaline material, typically

> [illegible] adhesive binder in paper coating compositions [illegible]
> to prepare the binder solution is at a level sufficient to form an adhesive binder for the pigment coating and typically of a sufficient level so when the coating composition with

the mineral pigment is prepared about 1 to 20% by weight of the coating comprises binder.

In fact, Krinski teaches away from this noting that it is the various primary amino groups of the vegetable protein materials that can be modified, as noted, inter alia, on column 2, lines 50 to 57:

> Preferably, the organosilane reagent is a silanation reagent such as an alkoxy silane reagent, most preferably an alkene alkoxy silane reagent, such as an alkene trialkoxy silane reagent. Modification of the protein material with the acrylate reactant occurs through modification of the various primary amino groups which are present in the amino acid residues of the vegetable protein material. [emphasis added]

In considering the instant response and amendment, Applicants respectfully aver that Krinski is not a single prior source that contains each and every limitation of claims 1 to 3, 8 to 11, 18 to 20 and 22. Accordingly, this rejection under section 102(b) can be properly withdrawn.

Plueddemann, U.S. Patent No. 4,231,910

Claims 1-3, 12-13, 15, 23-28, and 32-34 are rejected under 35 USC 102(b) as allegedly anticipated by Plueddemann, U.S. Patent No. 4,231,910.

The Patent Office alleges that Plueddemann, entitled "Primer composition," teaches a modified biological molecule (primer compositions) on a solid support, citing column 2, lines 21 to 39 and column 3, lines 22 to 29.

Applicants respectfully aver that Plueddemann does not teach or suggest modifying any biological molecule. In fact, the primer composition of Plueddemann is a primer composition for application to a solid substrate to provide improved adhesion with thermoplastics, not an oligonucleotide "primer."

Plueddemann does not teach or suggest modifying any biological molecule, for example, in column 2, lines 21 to 39, these lines read:

> [illegible] mercaptoethyltrimethoxysilane or 3-mercaptopropyltrimethoxysilane which are well known and commercially available compounds. In addition partial hydrolyzates of these silanes can be utilized in the primer compositions. "Partial hydrolyzate" is meant to imply

that the silane has been hydrolyzed with water, but that a detectable amount of hydroxyl or methoxy groups remain uncondensed in the composition. It is preferable that one such group per every four silicon atoms remain uncondensed.

When the primer composition is to be stored some time before use, it is preferred to employ 3-glycidoxypropyltrimethoxysilane in the primer composition for improved stability.

See also, e.g., column 3, lines 22 to 29, which also do not teach or suggest modifying any biological molecule; these lines read:

The primer compositions are utilized to increase both wet and dry adhesion of thermoplastics to solid substrates. The solid substrate can be any solid including siliceous material such as glass, quartz, ceramic, asbestos, silicone resin and glass fibers, metals such as aluminum, steel, copper, nickel, magnesium, and titanium, metal oxides such as MgO, Fe_2O_3, and Al_2O_3, or an organic solid such as wood, rubber or plastic materials.

As noted above, the primer composition of Plueddemann is a primer composition to provide improved adhesion with thermoplastics. It is not an oligonucleotide "primer." For example, as stated in the Summary (see column 2, lines 3 to 18);

The present invention relates to a primer composition for application to a solid substrate to provide improved adhesion with thermoplastics, the composition consisting essentially of (A) 1 to 25 weight percent of an organosilicon compound selected from a group consisting of (1) 3-glycidoxypropyltrimethoxysilane, (2) 3-mercaptopropyltrimethoxysilane, (3) 2-mercaptoethyltrimethoxysilane, (4) 2-(3,4-epoxycyclohexyl)-ethyltrimethoxysilane, and (5) partial hydrolyzates of (1), (2), (3) or (4) and (B) 75 to 99 weight percent of an alkoxymethyltriazine which is a product of etherification of a methyloltriazine with a monohydric alcohol having 4 carbons or less.

See also column 3, lines 1 to 9 and 61 to 64 of Plueddemann:

The primer compositions of the present invention contain 75 to 99 percent by weight alkoxymethyltriazine. When commercially available alkoxymethyltriazines which are supplied in solvents such as isopropanol, butanol and xylene are employed, sufficient solution is employed so that the weight of alkoxymethyltriazine is 75 to 99 percent of the combined weight of organosilicon compound and alkoxymethyltriazine excluding solvent weight.

The primer compositions of this invention are generally specific for the types of

Accordingly, Plueddemann is not a single prior source that contains each and every limitation of claims 1-3, 12-13, 15, 23-28, and 32-34. Accordingly, this rejection under section 102(b) can be properly withdrawn.

Beattie, U.S. Patent No. 6,426,183

Claims 1 to 3, 12 to 15, 23 to 28, 32 to 38, 47 and 82 to 83 are rejected under 35 USC 102(e) as allegedly anticipated by Beattie, U.S. Patent No. 6,426,183, filed August 14, 1998, which is a CIP of an application filed December 19, 1996 (now U.S. Patent No. 6,156,502, with a provisional priority document filed December 21, 1995).

The Patent Office cites Beattie for allegedly teaching microarrays comprising modified biological molecules and disclosing solid supports comprising silane-containing substrates which include hydroxyl groups, citing, inter alia, column 4, lines 46 to 54.

Applicants respectfully aver that Beattie does not teach or suggest modification of any biological molecule by reaction with a compound having the formula: $R_1 — X — R_2$, wherein R_1 comprises a cyclic ether group or an amino group, R_2 comprises an alkoxysilane group and X comprises a moiety chemically suitable for linking the cyclic ether group or the amino group to the alkoxysilane group. Beattie does not teach or suggest any array comprising a biological molecule modified with a compound having the formula: $R_1 — X — R_2$, wherein R_1 comprises a cyclic ether group or an amino group, R_2 comprises an alkoxysilane group and X comprises a moiety chemically suitable for linking the cyclic ether group or the amino group to the alkoxysilane group.

Beattie does not discuss modification of any biological molecule by reaction with a compound having silane. The silanes discussed in Beattie are in the substrate to which a biological molecule is attached, not in the biological molecule to be attached to the substrate. For example, the paragraph of column 4, lines 46 to 54 of Beattie, cited by the Patent Office, and the paragraph immediately preceding it read:

> surface of which comprises or has been treated to expose silanol groups. Examples thereof include the glasses identified above, porous silica materials, micromachined silicon, oxidized silicon materials, and materials coated with any of the foregoing.

> Silane--Refers to S_iH_{2n+2}. Silane-containing compounds or substrates are generally gaseous or liquid compounds of silicon and hydrogen, analogs to alkanes or hydrocarbons. SiH_3 is called silyl (analogous to methyl) and Si_2H_5 is disilanyl (analogous to ethyl). A cyclic silicon and hydrogen compound having the formula SiH_2 is called a cyclosilane. Organo-functional silanes are noted for their ability to bind organic polymers to inorganic substrates.

The silanes discussed in Beattie are in the substrate to which a biological molecule is attached, not in the biological molecule to be attached to the substrate. For example, see also column 1, lines 49 to 57, of Beattie, which reads:

> The present invention provides a method for attaching a compound having at least one amine group and at least one hydroxyl group, to a silane-containing substrate, e.g., a glass, porous silica, oxidized silicon, or other silaceous or silane-containing material. More specifically, the present invention provides a method for attaching an aminopropanol-containing compound to a silane-containing substrate, e.g., a glass, porous silica, oxidized silicon, or a silanized material.

Accordingly, because Beattie does not teach or suggest modification of any biological molecule by reaction with a compound having the formula: $R_1 — X — R_2$, or any array comprising a compound having the formula: $R_1 — X — R_2$, wherein R_1 comprises a cyclic ether group or an amino group, R_2 comprises an alkoxysilane group and X comprises a moiety chemically suitable for linking the cyclic ether group or the amino group to the alkoxysilane group, Beattie is not a single prior source that contains each and every limitation of claims 1 to 3, 12 to 15, 23 to 28, 32 to 38, 47 and 82 to 83, and this rejection under section 102(b) can be properly withdrawn.

Applicants also note that the priority document of the instant application (the instant application is a CIP of co-pending USSN 09 546,085, which is a CIP of U.S. Patent No. 6,048,695) is a "reference cited" in Beattie.

Issues under 35 U.S.C. §103(a)

Beattie in view of Pinkel et al.

U.S. Patent No. 5,830,645, filed November 3, 1998.

The Patent Office states that Beattie does not disclose biological molecules comprising nucleic acid derived from human or mouse and does not disclose kits comprising biological molecules.

However, as noted above, Applicants respectfully aver that Beattie is further deficient in that it does not teach or suggest modification of any biological molecule by reaction with a compound having the formula: $R_1 — X — R_2$, or any array comprising a compound having the formula: $R_1 — X — R_2$, wherein R_1 comprises a cyclic ether group or an amino group, R_2 comprises an alkoxysilane group and X comprises a moiety chemically suitable for linking the cyclic ether group or the amino group to the alkoxysilane group.

The Patent Office cites Pinkel, entitled "Comparative Fluorescence Hybridization to Nucleic Acid Arrays," for teaching, inter alia, microarray-based determination of relative copy number of target nucleic acid and arrays comprising genomic DNA derived from various sources and arrays and kits with DNA of various sizes.

However, Applicants respectfully aver that Pinkel does not cure the defects in Beattie. Pinkel does not teach or suggest modification of any biological molecule by reaction with a compound having the formula: $R_1 — X — R_2$, or any array comprising a compound having the formula: $R_1 — X — R_2$, wherein R_1 comprises a cyclic ether group or an amino group, R_2 comprises an alkoxysilane group and X comprises a moiety chemically suitable for linking the cyclic ether group or the amino group to the alkoxysilane group. Accordingly, neither Beattie nor Pinkel, alone or in combination, teach or suggest the invention as set forth in claims 16 to 17, 30 to 31, 40 to 46 or 48 to 57.

In view of the above remarks, Applicants respectfully submit that the pending claimed invention is distinguished from the cited art and request reconsideration and withdrawal of the rejection under 35 U.S.C. §103(a).

CONCLUSION

In view of the foregoing amendment and remarks, it is believed that the Examiner can properly withdraw the rejection of the pending claims under 35 U.S.C. §101, 35 U.S.C. §112, second paragraph, 35 U.S.C. §102(b) and 35 U.S.C. §103(a). Applicants believe after entry of the instant amendment all claims pending in this application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If necessary, please apply additional and necessary charges, and apply all credits, to Deposit Account No. 06-1050.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (858) 678-5070.

Respectfully submitted,

Date: Feb. 28, 2003

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Version with markings to show changes made

In the claims:

1. (Amended) A [modified biological molecule] composition comprising a [biological molecule] nucleic acid or an analog or mimetic thereof, a polysaccharide or an analog or mimetic thereof, a lipid or an analog or mimetic thereof, a peptidomimetic or a small molecule modified by reaction with a compound having the formula: $R_1 — X — R_2$, wherein R_1 [is] comprises a cyclic ether group or an amino group, R_2 [is] comprises an alkoxysilane group and X [is] comprises a moiety [chemically suitable] for linking the cyclic ether group or the amino group to the alkoxysilane group.

2. (Amended) The [modified biological molecule] composition of claim 1, wherein the cyclic ether [is] comprises a compound comprising an epoxide group.

3. (Amended) The [modified biological molecule] composition of claim 2, wherein the epoxide [is] comprises ethylene oxide.

4. (Amended) The [modified biological molecule] composition of claim 1, wherein the cyclic ether [is] comprises an oxirane group.

5. (Amended) The [modified biological molecule] composition of claim 1, wherein the cyclic ether [is] comprises a compound comprising an aromatic hydrocarbon epoxide group.

6. (Amended) The [modified biological molecule] composition claim 1, wherein

peptidommetic.

7. (Amended) The [modified biological molecule] composition of claim 6, wherein the R_1 group is covalently bound to the [biological molecule] nucleic acid or an analog or mimetic thereof, the polysaccharide or an analog or mimetic thereof, the lipid or an analog or mimetic thereof, the peptidomimetic or the small molecule.

8. (Amended) The [modified biological molecule] composition of claim 1, wherein the [biological molecule] composition comprises a [polypeptide, a peptide or a] modified peptidomimetic.

9. (Amended) The [modified biological molecule] composition of claim 1, wherein the [biological molecule] composition comprises a modified polysaccharide[,] or an analog or a mimetic thereof.

10. (Amended) The [modified biological molecule] composition of claim 1, wherein the [biological molecule] composition comprises a modified lipid[,] or an analog or a mimetic thereof.

11. (Amended) The [modified biological molecule] composition claim 1, wherein the [biological molecule] composition comprises a modified small molecule.

12. (Amended) The [modified biological molecule] composition of claim 1, wherein the [biological molecule] composition comprises a modified nucleic acid or an analog or mimetic thereof.

13. (Amended) The [modified biological molecule] composition of claim 12, [wherein the modified nucleic acid is a DNA or an RNA.

14. (Amended) The [modified biological molecule] composition of claim 13,] wherein the nucleic acid reacts with the R_1 group at its 5' end.

15. (Amended) The [modified biological molecule] composition of claim 12, wherein the nucleic acid is an oligonucleotide.

16. (Amended) The [modified biological molecule] composition claim 12, wherein the nucleic acid comprises a telomeric structure.

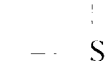
17. (Amended) The [modified biological molecule] composition of claim 12, wherein the nucleic acid comprises a chromatin structure.

18. (Amended) The [modified biological molecule] composition of claim 1, wherein cyclic ether [is] comprises an epoxide group and the alkoxysilane is —$Si(OCH_3)_3$, —$Si(OC_2H_5)_3$, —$Si(OCH_3)H_2$, —$Si(OCH_3)(CH_3)_2$, or —$Si(OCH)_3)_2CH_3$.

19. (Amended) The [modified biological molecule] composition of claim 1, wherein cyclic ether [is] comprises an epoxide group and the compound is 3-glycidoxypropyltrimethoxysilane (GPTS).

20. (Amended) The [modified biological molecule] composition of claim 1, wherein the R_1 amino group comprises a primary amino group.

21. (Amended) The [modified biological molecule] composition of claim 1, wherein R_1 [is] comprises an amino group and the alkoxysilane is selected from the group consisting of —$Si(OCH_3)_3$, —$Si(OC_2H_5)_3$ and



[illegible]

CH_3, OCH_3, and OC_2H_5, and provided that at least one of R_1, R_2 or R_3 is either

[illegible]

22. (Amended) The [modified biological molecule] composition of claim 1, wherein R_1 [is] comprises an amino group and the compound [is] comprises 3-aminopropyltriethoxysilane.

82. (Amended) A method for making a modified biological molecule comprising

(a) providing a biological molecule;

(b) providing a compound having the formula: $R_1 — X — R_2$, wherein R_1 [is a cyclic ether group or] comprises an amino group, R_2 [is] comprises an alkoxysilane group and X [is] comprises a moiety chemically suitable for linking the cyclic ether group or the amino group to the alkoxysilane group; and

(c) reacting the biological molecule with the compound, thereby modifying the biological molecule with the compound.

83. (Amended) A method for making an article of manufacture comprising an arrayed plurality of biological molecules covalently bound to a surface comprising

(a) providing a biological molecule;

(b) providing a compound having the formula: $R_1 — X — R_2$, wherein R_1 [is] comprises a cyclic ether group or an amino group, R_2 [is] comprises an alkoxysilane group and X [is] comprises a moiety chemically suitable for linking the cyclic ether group or the amino group to the alkoxysilane group;

(c) providing a surface comprising hydroxyl groups;

(d) reacting the biological molecule with the compound, thereby modifying the biological molecule with the compound; and

(e) depositing a plurality of modified biological molecules on the surface as [illegible] biological molecule is attached to the surface on at least one [illegible] array comprises a plurality [illegible]

[illegible] 102 has been added